many of the other functions may be interconnected. For example, an impact to wetland processes in a pastured area may have a significant impact on processes in the hydrologically contiguous, adjacent forested area.

AUs and Property or Project Boundaries

Property boundaries or a project footprint should also not be used to define an AU, unless some of the circumstances described above apply. For example, a project may be proposed that would fill two acres of a 10-acre wetland. The entire 10-acre wetland should be assessed as one unit to determine the performance or suitability index. The index is a score "per acre or hectare," as described in Part 1, Chapter 2. You would calculate the function being lost to fill by multiplying the index for each function by the two acres to be impacted.

AUs and Proposed Alterations

A wetland should not be divided into AUs by different proposed or actual alterations. As long as the AU is one subclass and has no hydrologic breaks, the entire wetland should be the AU even if only a small part is proposed for filling or alteration.

Assessing Sub-units of Larger AUs

Under some circumstances a wetland of one subclass may have no hydrologic breaks, but has areas that are dramatically different visually. An example is a wetland in which one part is a grazed pasture and the other is a complex mosaic of mature forest, sedge meadow, and shrub swamp. We recommend that you **DO NOT** subdivide the assessment unit into smaller units. The assessment methods were developed to assess an entire hydrologic unit, and do not provide an accurate assessment of sub-units. When the methods were tested on smaller sub-units of a hydrologically distinct wetland unit, the scores obtained did not match the judgments of the assessment team.

If a percent area of the AU is requested on the data sheet, it should be recorded as a number between 0 and 100, not as a fraction or using the % symbol. The term "percent cover," however, means the percent of the ground surface covered by a specific vegetation type, as described below.

Areal Estimates vs. % Cover

Areal estimates are easily confused with % cover. Percent cover is usually estimated to describe the amount of ground covered by a particular species or vegetation class as viewed from above. Therefore, in a given area, several plants or vegetation classes can cover the same percentage of the ground if they overlay each other or occur in different strata. Percent cover is used, for example, when determining the "Cowardin" vegetation classes present in an AU. "Cowardin" vegetation classes are identified by the vegetation type that occupies the upper most stratum and covers at least 30% of the ground in that stratum as seen from above.

Estimates of % cover can also be done using the dot or grid method or visual estimates. Appendix 2- I provides a Vegetation Profile Board that can assist you with making visual estimates. Visual estimates, however, should not be used to estimate percent area covered by a feature.

Identifying features that are of special importance to society, such as the presence of endangered and threatened species or locally rare plant communities is not a part of this assessment. Note all such features and record on the "Summary of Methods Results."

Step 8: Complete Data Sheet

After completing your field work, use your field notes and photo maps to record the data that you have not already noted on the data sheet during your reconnaissance. Also record the following information on the data sheet at the top of the data sheet. Make sure you include the dichotomous key used to help determine the AU's classification.

Wetland name

AU identification number

Date of field visit

Time spent in office

Time spent in field

Names of those collecting the data

maps. We recognize that using topographic maps to determine land uses is crude and that it is difficult to determine, for instance, the actual land uses taking place in the white areas. Use other sources of information where possible, such as land use maps developed by local governments.

Percentages can be estimated by using the "dot" method or a planimeter without actually calculating the area involved. The ratio of (#dots per land use/#dots in 1 km circle) x 100 = percent area.

D4: Channel within AU

Record a [1] on the data sheet if the AU contains a channel. Record a [0] if the AU does not have a channel. The channel must be at least 10 m (33 ft.) in length within the AU to count.

A channel is defined as a distinct linear depression with identifiable bank edges that have been shaped by flowing water and have a definable outlet. Both banks have to be within the boundary of the AU to answer a "yes" for this datum. Man-made ditches are also categorized as channels. In this case the bank edges are not natural. Also grassy swales that intermittently carry slow-moving water, without distinct bank edges, can be considered a channel.

See guidance in Step 6 for when to include and exclude the stream or river from the AU.

The banks can be a few inches high. It is hard to identify channels if the wetland is flooded. They can be identified during periods of flooding by a linear break in the vegetation, or from aerial photos taken during the dry season.

D4.1 Try to determine if there is water flowing in the stream or channel for the entire year. You may assume that the flow is permanent if you observe flow during the summer months (July-September). You will have to use your judgement to answer this question during other times of the year. Check aerial photos (most of which are taken during the summer), refer to topographic maps, ask local residents, or judge the permanence of flow from the size, depth, and substrate of the channel. Establishing flow may be difficult in some cases such as riverine impounding AUs that have formed in old stream channels. The impounded open water in the AU may follow the old stream channel and may be present all year around. Such channels, however, usually do not have flowing water.

D4.2 ***This datum is used only for AUs that are classified as riverine flow-through.*** Note whether the channel or stream is contained within dikes. Answer a "1" to datum 4.2 if the average distance of the dike to the nearest channel/stream bank is less than 4 times the average distance between the channel banks. Estimate the average distance of the dike to the channel and the channel width only within the boundaries of the AU you have chosen (Figure 5).

NOTE 2: Be sure to record the channel length as the numerator. A common mistake is to record the channel as the denominator and the length of the AU as the numerator.

NOTE 3: The channel in D5 is the same as the one in D4. If the channel is not continuous through the unit, for example the channel intersects a few areas of open water, the length of the channel would include the length of the open water as if the channel were continuous.

NOTE 4: If the AU curves into an L shape, estimate the length of AU along the "longest axis" by summing the length of both parts of the L.

D8: Areas of different types of inundation

D8.1: Percent of the AU that is annually inundated

The total area of the AU that has surface water present for at least 1 month each year (in most years) is one of the more important characteristics used in the assessment. It is, however, one of the more difficult to determine during the dry season.

During the wet season, the area of inundation can be drawn directly on a "photo" map during the field reconnaissance, and the relative percent of the AU determined by using either the dot method or a planimeter. On the data form record the total percent of the AU that is inundated every year (including areas of permanent inundation) as a number between 0 and 100.

> Inundation has to be present for at least one month to be considered for this datum. It includes both the areas that are seasonally inundated and those that are permanently inundated.

During the dry season, however, the area of annual ponding or inundation will have to be estimated by using one or more of the following indicators.

- Water marks on trees or vegetation
- Drift lines of debris on the ground
- Water stained leaves (grayish or blackish in appearance)
- Scoured areas on the surface
- Areas where aquatic bed vegetation is present even though the ground may not be inundated
- Adventitious roots
- Level at which moss begins to grow on trees

To determine the area of annual inundation, walk in from the AU edge to the location where one or more of the indicators appear and mark the location on a "photo" map. Repeat this process at least four times at points that are about equidistant along the AU boundary (collect soil data at these four locations also).

For the purposes of this method, the area of permanent open water is similar to the areas of unconsolidated bottom (UB) and "rock bottom" (RB) classes that have the "permanent water" modifier in the Cowardin classification.

Draw the outline of the permanent **open inundation** on the "photo" map and estimate its extent as a percent of the total AU.

> **NOTE 1:** Permanent open inundation may include "non-persistent" aquatic species areas if they cover less than 0.1 hectares for AUs equal to or less than 1.0 hectare (2.5 acres) or 10% of AUs less than 1.0 hectare. If the non-persistent aquatic species cover a larger area they should be classified as "aquatic bed", and recorded in D14.
>
> **NOTE 2:** Discontinuous areas of permanent open inundation can be added together to estimate the total percent of the AU occupied by permanent open water.
>
> **NOTE 3:** At certain times of year it may be difficult to determine if permanent open inundation (with or without non-persistent aquatic species) is present. During the winter the area of open inundation will include the area that is only seasonally open as well. A good indicator of permanent open inundation is the area without any emergent vegetation or the remains of non-persistent aquatic species. Also, most aerial photos are taken in summer months. Areas of open water visible on these photos can be considered permanent open inundation.
>
> **NOTE 4:** If the AU contains a stream that does **not** have overhanging vegetation, the area covered by the stream can be counted as part of the open water component.
>
> **NOTE 5:** Riverine flow-through wetlands are categorized as having permanent open water only if they have a permanent stream without an overhead canopy. The same size threshold is to be used.

D8.4: Percent of the AU with unvegetated bars or mudflats

Some vegetated wetlands may contain small sand-bars or mudflats within their boundaries. Record unvegetated bars or mudflats as a percent of the total AU. **Bars and mudflats are counted only if they are above the surface of permanent water.** Areas permanently under water should be included in the previous datum. There are no size thresholds for this datum. The goal is to account for the entire AU within data D8 and D14.

An area is considered "unvegetated" if the total cover of plant material is less than 30%.

> **NOTE:** It will be difficult to determine if mudflats are present during the winter and spring when the AU is full of water. If possible use aerial photos taken during the summer to identify the presence of mudflats.

D8.5: Presence of unvegetated bars or mudflats

Record unvegetated bars or mudflats that are at least 100 m^2 in size. **Bars and mudflats are counted only if they are above the surface of permanent water.** In

large AUs you may find that the bars and mudflats are less than 1% of the area and would be recorded as a zero in the previous datum, but may meet the size threshold for this datum.

D9: Types of inundation/saturation categories present in AU

Identify the different types of inundation/saturation categories present in the AU using the descriptions below. Record a [1] on the data sheet for **all** the inundation that might apply. Remember that different parts of an AU may have different regimes.

For AUs equal to or greater than 1.0 ha (2.5 acres), an inundation/saturation category must occupy, at least, 0.1 ha (1/4 acre) of the total AU to be recorded. For AUs less than 1.0 ha, the threshold is 10% of the total area of the AU.

The purpose is to **identify the wettest water regime within areas of the AU**. Thus, an area that is seasonally inundated, but only saturated to the surface during a field visit in the summer, would be categorized as "seasonally inundated," **not** "saturated" to the surface.

D9.1 Permanently Inundated — Surface water covers the land surface throughout the year, in most years.

> **NOTE:** During high water in the winter and spring, it may be difficult to determine the area that would be permanently flooded during the summer dry period. One indicator of permanent water is an area of open water without vegetation inside the zone of seasonal inundation. Aerial photos taken during the summer may also show areas of permanent water.

D9.2 Seasonally Inundated — Surface water is present for extended periods (for more than 1 month during a year), especially early in the growing season, but is absent by the end of the season in most years. During the summer dry season it may be difficult to determine the area that is seasonally inundated. Use the indicators described in D6 to help you determine areas that are seasonally flooded or inundated.

D9.3 Occasionally Inundated — Surface water is present for brief periods of less than one month during the growing season, but the water table usually lies below the soil surface for most of the season. Plants that grow in both uplands and wetlands are characteristic of the temporarily flooded regime.

D9.4 Saturated — The substrate is saturated to the surface for long enough to create a wetland, **but surface water is seldom present**. The latter criterion separates saturated areas from inundated areas. In this case, there will be no signs of inundation on plant stems or surface depressions.

D9.5 Permanently Flowing Stream — The AU contains a river, stream, channel, or ditch with water flowing in it throughout the year.

D9.6 Intermittently Flowing Stream — The AU contains a river, stream, channel, or ditch in which water flow is intermittent or seasonal.

D10: Average depth of inundation above the lowest point of outflow (estimating live-storage)

Locate the outlet of the AU and identify its lowest point, or the top of any permanent outflow present. Estimate the difference in elevation between this low point and the marks of annual inundation observed for D8.1. This will provide an estimate of the depth of live-storage during the seasonal high water. Try to find inundation marks as close to the outlet as possible so you can make visual estimates of the height from the outlet. Record the difference in elevation between the lowest point of the outlet and the level at which you noted marks of inundation. Record to the nearest 0.3 m (1 ft.)

NOTE 1: If the outlet is a beaver dam or weir, treat the top of the dam or weir as the lowest point. If water is flowing over the dam then the water surface anywhere in the AU can be used to establish the low point.

NOTE 2: If the AU has multiple outlets, try to find the one that has the lowest topographic elevation.

NOTE 3: This datum does not apply to riverine flow-through wetlands since they do not hold back water longer than the flood event.

NOTE 4: Sometimes the lowest point of the outlet is flooded or flowing. In these cases, measure from the bottom of the outlet to the level of marks of average annual flooding. A common mistake is to measure from the current water level in the outlet to the marks of flooding.

NOTE 5: It can be difficult to extrapolate the height of flooding above the lowest point of the outlet in large AUs where the flood marks are distant from the outlet.

D17: Percent of AU with a canopy closure of woody vegetation

Identify the areas that are covered by the forested and scrub-shrub classes using the photo map of Cowardin classes developed above (D14). Within these areas, outline the areas where the forests and shrubs cover at least 75% of the ground (this is more restrictive than the 30% requirement for the Cowardin classes.) The shrub component must be at least 1m (3.3 feet) high. Estimate the % of the AU that has this denser canopy.

> **NOTE 1:** Some small AUs may have a canopy cover that is a result of trees rooted outside the AU. For this datum the canopy closure estimate **should** include the canopy provided by trees and shrubs rooted outside the AU.
>
> **NOTE 2:** Most people have difficulty in visually estimating % canopy closure in the field. An estimate from the aerial photo is usually more accurate.

D18: Percent length of stream with a 75% canopy closure

Used only for Riverine Flow-through subclass

If the AU does not have a stream within its boundaries, record a [0]. If the AU does have a stream, determine if any part of the stream within the AU has a canopy closure of overhanging trees or shrubs that is greater than or equal to 75%. For this datum, record the length of the stream that has a 75% canopy cover, or greater, as a percent of the total length of the stream within the AU. For example, if the AU has 40 m of stream within its boundaries and 20 m of that length has a canopy cover that occupies 75% of the width of the stream, record 50 as the number in D16.

> **NOTE**: The canopy has to be at least 1m (3.3ft) high above the stream to count for this datum

D19: The number of plant species present

As you walk in and around the AU, keep a list of the different number of plant species you find. It is best to keep two lists, one for native species and one for non-natives. You should try to identify plants to genus or species level if possible. If identification is not possible, your list can distinguish different plants by listing species 1, species 2, species 3 etc. Of the plants that you observed at the time of the site visit, the goal is to identify at least 80% to genus and species. Appendix L provides a list of common wetland plants in the Northwest.

We recognize that the number of species you observe will vary with the season. Therefore, if you see species that are dead but are recognizably different than the other species present, record them as "species 1" etc.

2. Areas where several co-dominants are present — A different plant assemblage should be identified if there is no single dominant but several species are common that can be considered co-dominant. Co-dominance is defined as species that cover between 20-50 % of surface of the ground. Thus, assemblages defined by co-dominant species can have between 2 and 5 co-dominants.

3. Areas where no single species or group of co-dominants are present — A different plant assemblage is recognized if there are no species with cover greater than or equal to 20% of the surface of the ground, or if only one species has a cover >20% but no other species meet this criterion.

4. Areas where different species are dominant or co-dominant in the understory — A different plant assemblage should be counted if different species are dominant or co-dominant in the understory of forest or scrub-shrub vegetation. For example, an alder forest may have an understory of stinging nettle in one area and an understory of salmonberry in another. These two areas should be identified as two different plant assemblages.

> **NOTE 1:** Transition zones between plant assemblages may be considered as separate assemblages based on criterion #3 if they meet the minimum size threshold.
>
> **NOTE 2:** Aquatic bed species can be considered in your identification of assemblages.

D21: Number of vegetation strata present

As you observe the plant assemblages present (D20), identify the one with the most strata (vegetation layers) present and record the number of strata on the data sheet. To be counted, a stratum must cover at least 20% of the ground within the boundary of its plant assemblage, and be rooted in the AU.

A maximum of six strata can be present in any one assemblage. Do not include aquatic bed vegetation since that is addressed in D25. The strata being assessed are:

1. **Mosses and other ground cover**
2. **Herbaceous/short woody** — non-woody vegetation, usually less than 2m tall (*Typha spp.* and *Phragmites spp.* may exceed the height limit), and woody vegetation less than 2 m tall (e.g. *Kalmia* spp).
3. **Shrub** — Woody vegetation taller than 2m (6ft) consisting of shrubs, or young trees. The shrub stratum rarely exceeds 6 m (20 ft) in height.
4. **Sub-canopy —** Young or small trees growing under a canopy that range between 6-12 m (20-40ft).
5. **Canopy** — The highest vegetation stratum in an assemblage. It consists of large trees that may extend over the other four strata. It is usually higher than 12-15 m (40-50 ft).

species. Estimate if the total area covered in and around the AU is at least 1.0 ha (2.5 acres). If so, record it as a [1] in the field data sheet. If the area is less, record a [0].

> **NOTE:** If there is an area where a preferred species is co-dominant (cover 20-49%) with a non-preferred species, divide the total area of that assemblage in half to determine if the 1 hectare threshold is met.

D31: Decomposition stages of snags and stumps

As you collect data, observe the snags and stumps present in the AU. Categorize each snag and stump with regard to how much it has decayed. Use the diagrams on the data sheet and the table of decomposition characteristics below to help discern decomposition categories. When you see a snag or stump of the minimum diameter or larger (see box) and appropriate amount of decay, circle it on the diagram. At the end of the field reconnaissance, record the number of diagrams circled in row D31 of the data sheet.

Snags and stumps can be counted only if their DBH is at least 10 cm (4 in.) or 10 cm at the base for decayed stumps, and they are rooted in the AU. There is no height threshold.

> **NOTE:** Stumps that have not decayed are not counted (e.g. when recently cut).

D31.1 Snags larger than 30 cm.

Record a [1] if at least one of the snags above (D31) has a DBH greater than 30 cm (12").

D35: Egg laying structures for amphibians

Assess the interspersion between exposed inundation and thin-stemmed vegetation (or twigs and branches) in areas that are permanently or seasonally inundated. Use the dichotomous key in the data sheet. If characteristics in an AU do not match those described, use the rating that best represents the actual characteristics and record the appropriate score on the data sheet. In this case areas of aquatic bed vegetation can be treated as exposed water in judging interspersion.

NOTE: There are two stem-size thresholds for vegetation in this datum. The first question in the key asks if the AU has thin-stemmed vegetation that is between 1 – 8 mm. The other questions in the key ask if the vegetation is between 1-4 mm. Amphibians prefer smaller stem-sizes, but some species will use vegetation between 4-8 mm. The presence of the larger diameters in an AU will score less than the smaller ones.

D36: Tannins in surface water

Note if any areas of open or standing water have a brown, clear color. This color is an indicator of the presence of tannins in the water. If clear, brown water is present, determine if the area with tannins occur over a minimum of 10% of the total open and standing water in the AU. Record a [1] on line D36 of the data sheet if it does AND meets the color criteria described below.

The waters with high tannin content must extend over at least 10% of the areas of open and standing water.

To record a [1] on the data sheet the water should be the color often found in peat bogs. For those of you not familiar with the color of water in peat bogs, mix equal parts of water and a cola drink. The resulting colored water is a good approximation of water with a high tannin content. You may wish to take a sample of the diluted cola with you and an extra bottle of the same size for sampling for your site visit. Collect a sample of the water in the AU and compare it with your "cola standard." If the water in the AU is the same or darker, record a [1] for this datum.

> **NOTE:** The water has to be clear and brown. If the water is cloudy and brown it is probably carrying sediments and presence of tannins can't be determined.

D40: Structures in the AU that create eddies

Used only for riverine flow-through subclass.

Determine if the AU contains any of the following structural characteristics that would create eddies in flowing water. If you have difficulty determining if the structure is large enough, look for the presence of finer sediments just downstream of the structure.

A gravel or sand bar (may be vegetated or unvegetated)

Large logs (>50 cm diameter), or

Large rocks (>60 cm in diameter).

If any of these are present record the datum as present [1] on the data sheet.

D41: The characteristics of the edge between AU and uplands or adjacent wetlands

This datum assesses the structural complexity of the vegetation found at the edge between the AU and adjacent areas. It combines two different structural characteristics: 1) the sinuosity of the edge in the AU and 2) the presence of different vegetation levels along the edge.

Observe the different heights of vegetation structure on each side of the AU boundary. Vegetation heigth classes include mosses, emergent (or herbaceous), shrub, and forest. Also observe the sinuosity of the AU boundary. Choose the verbal description that best fits those characteristics of the edge and record the appropriate score.

If the vegetation structure and sinuosity are not consistent around the entire edge, characterize the conditions that occur for at least 50% of the circumference. If conditions are not consistent for a minimum of 50% of the edge, choose one of the last two options in the list below.

> **NOTE 1:** Treat unvegetated dikes or roads at the edge of the AU as if they were the same vegetation class found within the AU (i.e. they do not provide any complexity to the edge habitat).
>
> **NOTE 2:** Tilled fields without vegetation should be considered as "emergent/herbaceous."
>
> **NOTE 3:** Edges of the AU that are bounded by open water on one side should be treated as if there is no difference in vegetation structure.
>
> **Choose the description that best fits the characteristics of the AU edge.**
>
> **0** = If there are **no differences** in vegetation classes on each side of the AU for more than 50% of the circumference, **record a [0] regardless of the sinuosity**. Examples: emergent (or herbaceous) to emergent (or herbaceous), shrub to shrub, forest to forest.

NOTE 1: Woody debris must be seen to be counted. Don't make assumptions about areas you are unable to access.

Logs in permanent open water must be at least 2 m (6.6 feet) long to count, with a minimum of 10 cm (4 in.) diameter at the widest part.

NOTE 2: If large woody debris is half out of and half in permanent inundation, count it for both D44 and D45.

Log Characteristics	Log Decomposition Classes		
	Class 1	**Class 2**	**Class 3**
Bark	Intact	Intact	Trace
Twigs <3 cm (1.18 in)	Present	Absent	Absent
Texture	Intact	Intact to partly soft	Hard, large pieces
Color of Wood	Original color	Original color	Original color to faded
Portion of Log on Ground	Log elevated on support points	Log elevated on support points but sagging slightly	Log is sagging near ground

D45: Large woody debris in permanent inundation

As you collect data, assess the number of different types of woody debris present **in** the **permanent inundation** areas of the AU using the diagrams on the data sheet. (See instructions above.) The same size classes apply for D44 ad D45. At the end of the field visit, record the number of boxes checked for woody debris in permanent inundation in row D45.

D46: Composition of AU surface

The minimum size threshold for any category to be counted is 10 m^2. Patches smaller than this should not be recorded. Within a patch, the substrate type must cover at least 50% of the surface.

Note the type of non-living surfaces present on the ground, between stalks or stems of plants and in unvegetated, exposed areas. Record a [1] on the data sheet for every category present in the **areas that are not permanently inundated**. This datum does not apply to the substrate of permanently inundated areas. The categories are:

D46.1 broad-leaved deciduous leaf litter

D46.2 other plant litter

D46.3 decomposed organic matter (plant source cannot be identified, including exposed muck soils)

D46.4 exposed cobbles

D46.5 exposed gravel

D46.6 exposed sand

D46.7 exposed silt

D46.8 exposed clay

NOTE 1: Areas covered by mosses or other bryophytes have no exposed surface visible, and therefore have no non-living surface layer exposed.

NOTE 2: Appendix II M provides some guidance on characteristics that can be used to identify differences between organic soils, sands, silts, and clays.

NOTE 3: Bare earth from animal tunnels does NOT count.

NOTE 4: D46.1, D46.2, D46.3 are commonly called the "duff" layer.

D47: Soils present in the A horizon.

Determine the extent of different soil types present in the top 15 cm (3-4 in.) of the AU surface in the areas that are inundated and then dry out every year. This area extends from the edge of permanent inundation to the upper edge of water marks along the AU boundary. The soil categories used in this assessment are peat, organic muck, mineral, and clay. Figure 11 (Appendix M) provides guidance on identifying soil types.

D47.1 peat

D47.2 organic muck

D47.3 mineral with clay fraction <30%

D47.4 mineral with clay fraction >30% (clay soils)

The data sheet categorizes areal extent into four categories. Record a [0-3] to indicate which category applies to the soil types present. You can use the data form in Appendix P to simplify the data collection.

0 = <1% of the area between permanent inundation and the edge of water marks.

1 = 1% - 49%

2 = 50% - 95%

3 = >95%

To start, refer to a soil survey map and identify if the AU contains any soil series identified as a peat or muck. Soil surveys often accurately identify organic soils. It is a good idea, however, to verify the presence of peat or muck, as well as mineral soil, when you conduct the reconnaissance of the AU.

Sample the soil at a minimum of four points in the AU. Sample points should be within the interior of the AU, not along the edge, but within the area that is inundated annually. If may be necessary to sample other areas also (see NOTE 1 and the box below.)

To sample the soil, dig a hole, or use a soil auger, and characterize the soil down to 15 cm (3-4") below the level of the ground surface, into one of the four soil categories. Some guidance of field indicators for different soil types is given in Appendix 2 N.

Record 0-3 for the appropriate perecentage category of the extent for each soil type present **only in the areas that are annually inundated.**

NOTE 1: Always dig the hole to a depth of 60 cm (24 in.), and examine the soil in the top 15 cm for D47 and the soil between the surface and 60 cm for D48.

To collect data for both D47 and D48, locate all of your sampling points in the areas that are annually inundated for depressional AUs, or in the interior of a riverine AU where the frequent flooding occurs.

NOTE 2: It may be necessary to sample more than four locations if the AU is large (i.e. more than 4 ha, 10 acres), highly irregular, or if significant changes in plant assemblages indicate changes in soil types. As you walk through the AU, you will have to judge whether four sampling points provide an adequate mapping of the soils.

NOTE 3: Record the percentage of each soil type only as a percent of the area inundated annually. For example, the AU has only 20% of its total area inundated annually, but all the soils within this area are mineral, the correct number to record is a [3] (100% of the area is mineral soil).

D48: Infiltration rate of soils

You will also need to rate the infiltration rate of the soils in the parts of **depressional** AUs that are **seasonally inundated,** and in the **interior of riverine** AUs. If your AU is depressional and does not have any areas of annual inundation (i.e. D8.1=0), record a [0] for all categories of infiltration rate.

Record the infiltration rate of the soils with greatest areal extent in the area that is seasonally inundated (depressional) or in the interior portion of AUs that are riverine.

Choose several locations in the areas specified above depending on the class of the AU. Dig a soil hole 60cm deep (2 ft) or use a soil auger to determine the type of soil present between the surface and 60 cm (24 in.). Determine which infiltration rate rating applies following the key in Appendix II M. Record a [1] on the data sheet for the appropriate rating.

D48.1 FAST If gravel, cobbles, or large rocks are >50% of a sandy soil, the infiltration rate is judged to be "fast."

D48.2 MODERATE If sand is the dominant constituent of the soil, the infiltration rate is judged to be "moderate."

D48.3 SLOW If clays, silts, or organic matter (fines) are more than 25-30% of the soil, the infiltration rate is considered to be "slow."

NOTE 1: The infiltration rate may be assessed in conjunction with the soil types. See previous guidance for D47.